

A CRITICAL REVISION OF R. D. FITZGERALD'S "AUSTRALIAN ORCHIDS".

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[Read 29th November, 1944.]

Nothing can ever detract from the high merit of Fitzgerald's great work, in which, during the last quarter of the nineteenth century, he depicted in colour, and with a wealth of intricate detail, approximately two hundred species of Australian Orchidaceae. This number is considerably increased if we include his unpublished plates now in the possession of the Mitchell Library at Sydney; but the present paper is concerned only with those which were actually published and placed on sale or otherwise distributed, by authority of the Government of New South Wales.

Fitzgerald died in 1892; and in the fifty-two years which have passed since then, the study of Australian orchids has made great progress. Considering his limited facilities for reference, his difficulties in the matter of transport of material, and other disadvantages under which he laboured, it was inevitable that Fitzgerald should occasionally have been mistaken in his interpretations of species: indeed, the fact that he made so few mistakes is a great tribute to the accuracy of his botanical insight. Nevertheless, some mistakes were made. Moreover, since his time, the nomenclature of many of the orchids which he depicted has changed—sometimes in obedience to the international rule of priority, sometimes by reason of additional knowledge which has been won concerning the affinities between various species. It seems to the present writer that the time has come when it is most desirable to publish a review of Fitzgerald's work, which shall embody (a) necessary alterations in the nomenclature, (b) necessary corrections where it is recognized beyond reasonable doubt that Fitzgerald's interpretation of a species was mistaken, and (c) any further comments likely to assist in clearing up difficulties encountered by field workers who refer to "Australian Orchids" for the determination of specimens they have collected.

(a). Alterations in Nomenclature.

The simplest way to present these is to tabulate them, giving in one column the names adopted by Fitzgerald, together with a reference to the Volume and Part in which each occurs, and in a parallel column giving the corresponding names now accepted as valid. Fitzgerald did not follow any recognized order in the publication of his species; but it is thought best here to adopt the order used by the writer in his "Orchids of New South Wales" (National Herbarium of N.S.W., 1943), which in the main, with a few necessary modifications, follows Pfitzer's arrangement.

FITZGERALD'S NOMENCLATURE.	PRESENT NOMENCLATURE.
<i>Thelymitra megcalyptra</i> Fitzg. (I, 5.)	<i>T. aristata</i> var. <i>megcalyptra</i> (Fitzg.) Nicholls.
<i>Thelymitra luteocilium</i> Fitzg. (II, 1.)	<i>T. luteociliata</i> Fitzg.
<i>Diuris elongata</i> R.Br. (I, 4.)	<i>D. punctata</i> Sm.
<i>Diuris spathulata</i> Fitzg. (II, 4.)	<i>D. striata</i> Rupp.
<i>Microrhynchium porrifolia</i> Spreng. (II, 1.)	<i>M. unifolia</i> (Forst.) Reichb. f.
<i>Chiloglottis diphyllea</i> R.Br. (II, 2.)	<i>C. reflexa</i> (Labill.) Druce.
<i>Chiloglottis Gunnii</i> Lindl. (II, 2.)	<i>C. Gunnii</i> Lindl.
<i>Cyrtostylis</i> R.Br. (I, 4.)	Genus now absorbed into <i>Acianthus</i> .
<i>Cyrtostylis reniformis</i> R.Br. (I, 4.)	<i>Acianthus reniformis</i> (R.Br.) Schltr.
<i>Eriochilus autumnalis</i> R.Br. (II, 2.)	<i>E. cucullatus</i> (Labill.) Reichb. f.
<i>Lyperanthus ellipticus</i> R.Br. (I, 1.)	<i>Rimacola elliptica</i> (R.Br.) Rupp.
<i>Corysanthes</i> R.Br. (I, 1.)	<i>Corybas</i> Salisb.
<i>Corysanthes fimbriata</i> R.Br. (I, 1.)	<i>Corybas fimbriatus</i> (R.Br.) Reichb. f.
<i>Corysanthes pruinosa</i> Cunn. (I, 1.)	<i>Corybas pruinosus</i> (Cunn.) Reichb. f.
<i>Corysanthes bicalcarata</i> R.Br. (I, 2.)	<i>Corybas aconitiflorus</i> Salisb.

FITZGERALD'S NOMENCLATURE.

Corysanthes unguiculata R.Br. (1, 2.)
Cryptostylis longifolia R.Br. (I, 3.)
Pterostylis striata Fitzg. (I, 3.)
Pterostylis hispidula Fitzg. (I, 6.)
Galeola Ledgeri Fitzg. (II, 2.)
Epipogum nutans (Bl.) Reichb. f. (II, 5.)
Spiranthes australis Lindl. (I, 2.)
Oberonia palmicola F. Muell. (II, 3.)
Phaius grandifolius Lour. (II, 5.)

Dendrobium hispidum A. Rich. (II, 3.)
Dendrobium Taylori (F. Muell.) Fitzg.
(II, 3.)
Bolbophyllum Thou. (I, 5.)
Bolbophyllum Shepherdii F. Muell. (I, 5.)

Bolbophyllum lichenastrum F. Muell.
(II, 5.)
Osyricera Blume. (II, 5.)
Osyricera purpurascens Deane. (II, 5.)
Adelopetalum Fitzg. (II, 5.)
Adelopetalum bracteatum (F. M. Bail.)
Fitzg. (II, 5.)
Coelandria Fitzg. (I, 7.)
Coelandria Smilliae (F. Muell.) Fitzg.
(I, 7.)
Cleisostoma Blume. (I, 4.)
Cleisostoma erectum Fitzg. (I, 4.)
Cleisostoma tridentatum Lindl. (I, 5.)
Cleisostoma Beckleri F. Muell. (II, 2.)
Cleisostoma Keffordii F. M. Bail. (II, 2.)
Saccolabium Hillii F. Muell. (I, 2.)
Sarcochilus montanus Fitzg. (I, 5.)
Sarcochilus parviflorus Lindl. (I, 3.)

PRESENT NOMENCLATURE.

Corybas unguiculatus (R.Br.) Reichb. f.
C. subulata (Labill.) Reichb. f.
P. alata (Labill.) Reichb. f.
P. nutans R.Br. var. *hispidula* Fitzg.
G. foliata F. Muell.
E. roseum (D. Don) Lindl.
S. sinensis (Pers.) Ames.
O. Titania Lindl.
P. Tankervilliae (Banks in L'Herit.)
Blume.
Cadetia hispida (A. Rich.) Schltr.
Cadetia Taylori (Fitzg.) Schltr.

Bulbophyllum Thou.
B. crassulifolium (Cunn. apud Lindl.)
Rupp.
Dendrobium lichenastrum (F. Muell.)
Nicholls.
Absorbed into *Bulbophyllum*.
Bulbophyllum MacPhersonii Rupp.
Absorbed into *Bulbophyllum*.
Bulbophyllum bracteatum F. M. Bail.

Absorbed into *Dendrobium*.
Dendrobium Smilliae F. Muell.

Genus now considered obsolete.
Sarcanthus erectus (Fitzg.) Rupp.
Sarcanthus tridentatus (Lindl.) Rupp.
Sarcanthus Beckleri (F. Muell.) Rupp.
Camarotis Keffordii (F. M. Bail.) J. J. Sm.
Ornithochilus Hillii (F. Muell.) Benth.
A form of *S. falcatus* R. Br.
S. australis Lindl.

The following notes seem necessary in connection with the above:

- (1). *Diuris spathulata* Fitzg.—Fitzgerald's name is invalid, having been appropriated in 1805 by Swartz for the species to which Smith's name *D. aurea* was subsequently restored by the rule of priority.
- (2). *Lyperanthus ellipticus* R.Br.—It had long been felt by orchid workers in New South Wales that this plant occupied an anomalous position in *Lyperanthus*. In the *Victorian Naturalist*, Iviii, 1942, p. 188, Rupp made it the type of a new genus, *Rimacola*.
- (3). Genus *Corysanthes* R.Br.—Salisbury's name *Corybas*, though rejected by Bentham (*Fl. Aust.*, vi, p. 350) on ethical grounds, has undoubtedly priority over Brown's; and since the International Council of Nomenclature has refused to allow *Corysanthes* to be placed on the list of *nomina conservanda*, Salisbury's name must be accepted.
- (4). *Pterostylis striata* Fitzg.—This plant has not been recorded in New South Wales since Fitzgerald's time, but the details shown in his plate indicate its identity with H. G. Reichenbach's *P. alata*, a common species in all the other States except Queensland.
- (5). *Osyricera purpurascens* Deane.—Particulars of the transference of this plant to the genus *Bulbophyllum*, and of the necessary adoption of a new specific name, are given by Rupp in *Vict. Nat.*, li, 1934, p. 81.
- (6). *Adelopetalum bracteatum* Fitzg.—F. M. Bailey's treatment of this plant in *Queensland Flora*, vi, p. 1539, is generally accepted.

- (7). *Coelandria Smilliae* Fitzg.—Fitzgerald thought this so different from any species of *Dendrobium* (in which Mueller had placed it) that he created the new genus *Coelandria* for it. Mueller, however, was right, as the species belongs to a fairly large section of *Dendrobium*, well represented in the tropics north of Australia.
- (8). *Cleisostoma* Blume.—This genus is not now recognized as valid, the numerous species formerly included in it being distributed among *Sarcanthus*, *Saccolabium*, and other allied genera. Two Australian species, *C. Nugentii* F. M. Bail. and *C. Armitii* F. Muell., are retained for the present until material is procured for critical examination. For the distribution of all the other Australian species, see Rupp in *Vict. Nat.*, Iviii, 1941, p. 218.
- (9). *Saccolabium Hillii* F. Muell.—This plant has presented considerable difficulties to taxonomic botanists, and a new genus will probably have to be created for it. Schlechter, in fact, stated his intention to make it the type of such a genus, but so far as can be ascertained he did not do so. It is certainly not a true *Saccolabium*; and its removal by Bentham to *Ornithochilus* is not considered very satisfactory.
- (10). *Sarcochilus montanus* Fitzg.—This was subsequently reduced by Fitzgerald himself to a variety of *S. falcatus* R.Br. But intermediate forms are so numerous in some areas, exhibiting combinations of the characters of both type form and variety, that it seems hardly worth while retaining even varietal rank for *S. montanus*.

(b). *Erroneous Interpretations of Species.*

- (1). *Thelymitra canaliculata* R.Br. (II, 3).—It is often very difficult to determine accurately certain closely-allied species of *Thelymitra*, since the distinctions may be almost wholly confined to the smallest floral segment; the column. W. H. Nicholls, in a careful analysis of several of such species (*Vict. Nat.*, xlvi, 1929, pp. 28–33), concludes that the plant figured by Fitzgerald as *T. canaliculata* is a form of the rather variable species *T. media* R.Br. With this conclusion I agree. Brown described *T. canaliculata* from Western Australia; and although it is closely allied to both *T. media* and *T. ixoides* Sw., I do not now think it occurs in any of the eastern States. Fitzgerald's plate was prepared from specimens collected at Hunter's Hill, near Sydney. If it be compared with his exposition of *T. media* (I, 4), it will be seen that, although the two forms are different, they are not more distinct from one another than are varying forms of *T. ixoides* or *T. aristata*. One column is rather squat and compact, the other is elongated. But Nicholls shows that the column of the Western Australian flower differs rather strikingly from either. Fitzgerald believed he had found plants identical with his Hunter's Hill form near Albany, W. Aust. But unless one had both forms together, it would not be difficult, where the distinctions are on so small a scale, to make a mistake when examining flowers from localities two thousand miles apart. At all events, the column depicted by Fitzgerald as that of *T. canaliculata* is not reconcilable with that of the western species.
- (2). *Microtis parviflora* R.Br. (II, 1).—The species depicted by Fitzgerald over this name is really *M. oblonga* Rogers. (*Trans. Roy. Soc. S. Aust.*, xlvi, 1923, p. 339.) The details do not agree with those of *M. parviflora*, which has an entire labellum and no anterior callus. The crenulated labellum margins, large anterior callus, and tightly-revolute lateral sepals, of Fitzgerald's figures, are all characteristic of *M. oblonga*.
- (3). *Prasophyllum australe* R.Br. (II, 1).—Unquestionably there is a mistake here. Fitzgerald's plant is quite unlike *P. australe*, which is well illustrated (over the synonym *P. lutescens*) in Hooker's *Flora Tasmaniae*, ii, t. 110 B. The leaf of Fitzgerald's plant gives a clue to its identity; for only one species in this section of *Prasophyllum* has a bract-like leaf—namely, *P. flavum* R.Br. Nicholls reports that this aberrant form of *P. flavum* occurs in north-eastern Victoria; and Fitzgerald's specimens came from the south-east of New South Wales. Nicholls writes that in spite of the "rotund" appearance of the flowers, their morphology is that of *P. flarum*, which incidentally is not always as yellow as its name implies.

- (4). *Prasophyllum alpinum* R.Br. (II, 1).—The plant figured over this name may confidently be referred to *P. gracile* Rogers (*Trans. Roy. Soc. S. Aust.*, xxxiii, 1909, p. 213). It is not *P. alpinum*, the lateral sepals of which are consistently connate for at least half their length. For further particulars on this subject see Nicholls in *Proc. Roy. Soc. Vict.*, xlvi, 1933, (N.S.), pp. 28–35.
- (5). *Prasophyllum nigricans* R.Br. (I, 5).—Fitzgerald here seems to have figured a form of *P. rufum* R.Br., though it is hardly typical, and the common form is much darker in colour. But see note on *P. rufum* below.
- (6). *Prasophyllum rufum* R.Br. (II, 4).—Fitzgerald's determination of this species cannot be accepted. Nicholls has received drawings of the type from the British Museum, which prove that the species accepted for many years in New South Wales as *P. nigricans* is really *P. rufum*. Distinctions between it and *P. nigricans* of the southern States have been observed for some years, but they were allowed to pass as varietal. Both forms are very different from Fitzgerald's *P. rufum*, which is at present without a valid name. It has not been recorded for many years, and there is only one somewhat doubtful specimen in the National Herbarium at Sydney.
- (7). *Prasophyllum intricatum* Stuart (II, 4).—Stuart's name is invalid. Nicholls (*Vict. Nat.*, xlviii, 1931, p. 105) has shown that his plant is identical with *P. Archeri* Hook. f. Fitzgerald's plant, notwithstanding some morphological resemblance to *P. Archeri*, is now regarded as representing *P. Beaugleholei* Nicholls. See "Orch. N.S.W.", 1943, p. 35. An excellent figure of *P. Archeri* is given in Hooker f., *Flora Tasmaniae*, ii, t. 113 B.
- (8). *Drakaea elastica* Lindl. (II, 1).—Determination incorrect. The species figured over this name will be found described by Schlechter in *Fedde Repert.*, xvii, 1921, p. 81, as *D. Fitzgeraldii* Schltr. The author gives full particulars of the specific distinctions.
- (9). *Calochilus campestris* R.Br. (I, 4).—Determination incorrect. A good illustration of *C. campestris* will be found in *Bot. Mag.*, 1832, t. 3187. Fitzgerald's plant appears to be the comparatively rare pale-coloured form of *C. Robertsonii* Benth.
- (10). *Caladenia clavigera* Cunn. (I, 2).—Fitzgerald himself apparently had some doubt about this determination, for he remarks on the discrepancy between his plate and that given by Hooker f. in *Flora Tasmaniae*, ii, t. 222. The latter correctly depicts Cunningham's species. Rogers in *Trans. Roy. Soc. S. Aust.*, xliv, 1920, p. 330, unwittingly increased the confusion between these forms by describing a new species, *C. cordiformis*, from Victorian specimens of *C. clavigera* which all happened to possess non-clavate sepals. Cunningham's name is not particularly appropriate, as the sepals are not always clubbed, and even when they are, the clubs are less conspicuous than in several other species. But *C. clavigera* Cunn. and *C. cordiformis* Rogers are undoubtedly conspecific, and the latter name is invalid. The plant figured by Fitzgerald has been named by Rupp *C. Fitzgeraldii*. (*Vict. Nat.*, Ixviii, 1942, p. 199; and *Anst. Orch. Rev.*, vii, 1942, p. 64.)
- (11). *Pterostylis Mitchellii* Lindl. (I, 6).—This determination cannot be accepted; Fitzgerald's plant represents a form of the variable species *P. pusilla* Rogers. Neither the galea nor the lower sepals are those of *P. Mitchellii*, and the stigma is much too conspicuous.
- (12). *Bulbophyllum lichenastrum* F. Muell. (II, 5).—The plant figured here is irreconcilable with Mueller's specimens in the Melbourne and Brisbane Herbaria. In *The North Queensland Naturalist* for Sept. and Dec., 1938, Nicholls transferred Mueller's species to *Dendrobium*, and described Fitzgerald's plant (of which he had obtained specimens from North Queensland) as a new species under the name *D. variabile*. Subsequently (*ibid.*, March, 1942) he described another small northern *Dendrobium* as *D. aurantiaco-purpureum*, and stated that he now believed this to be the plant figured by Fitzgerald as Mueller's *Bulbophyllum lichenastrum*. Not having seen specimens of *D. aurantiaco-purpureum*, I cannot express an opinion on this point; but it is sufficient for the present purpose to say that Fitzgerald's plant is not identical with Mueller's.

(c). Additional Notes and Comments.

- (1).—*Diuris pedunculata* R.Br. (I, 7).—The large form illustrated by Fitzgerald alongside the typical form, has been named by Nicholls var. *gigantea*. (*Vict. Nat.*, xlix, 1932, p. 174.)
- (2). *Prasophyllum flavum* R.Br. (I, 3).—Though correctly determined, this is hardly the typical form, which is a more robust plant with dull yellowish-green flowers. Occasionally they are not yellow at all.
- (3). *Chiloglottis Gunnii* Lindl. (II, 2).—Apparently the specimens figured by Fitzgerald were received from some distant locality, and suffered in transit for the flowers are shown with their segments almost closed up. Actually they are very widely expanded, and this is the most attractive of all our species of *Chiloglottis*.
- (4). *Calochilus paludosus* R.Br. (I, 4).—It has been stated that Fitzgerald incorrectly depicts the flower of this species. In a note on p. 52 of "The Orchids of New South Wales", I have shown that this opinion is apparently due to a mistaken conception of certain details in the plate.
- (5). *Caladenia Patersonii* R.Br. (I, 3).—It is regrettable that finer specimens of this were not available to Fitzgerald for his plate, which certainly does not do justice to one of the most striking and attractive of all Australian orchid flowers. It displays a wide range of colours, and the sepals occasionally reach a length of 14 cm.
- (6). *Caladenia filamentosa* R.Br. (I, 7).—This fairly represents the typical form, though the perianth-segments are longer than usual. But the species is extremely variable, particularly in Western Australia. Tate's *C. tentaculata*, which was reduced by Rogers to a variety of *C. filamentosa*, is yellowish in colour, with remarkably long, thread-like sepals and petals.
- (7). *Caladenia carneae* R.Br.—Another very variable species, of which only the commonest form is depicted by Fitzgerald. Var. *gigantea* Rogers often has flowers nearly three times as large, while var. *pygmaea* Rogers (probably identical with *C. minor* Hook, f. of New Zealand) is very diminutive.
- (8). *Pterostylis Baptisiae* Fitzg. (I, 1).—The unusual character of the foliation in this plate (ascending the stem) suggests that the plant was growing in long grass or undergrowth. Normally, the leaves of this fine Greenhood are in a fairly compact basal rosette. The colouring of the flower is much darker than is found in most localities; but I have seen specimens from Brunswick Heads in northern New South Wales which matched Fitzgerald's precisely.
- (9). *Pterostylis truucata* Fitzg. (I, 4).—As a general rule this is a very dwarf species, the stem sometimes being no longer than the flower.
- (10). *Pterostylis reflexa* R.Br. (I, 5).—Fitzgerald includes in this plate the larger form described by Robert Brown as *P. revoluta*. In these PROCEEDINGS, lv, 1930, p. 414, I have given reasons for maintaining specific distinction between the two.
- (11). *Pterostylis parviflora* R.Br. (I, 7).—Fitzgerald chose a robust form to illustrate this variable species: it is often smaller and more attenuated. He considered Lindley's *P. aphylla* conspecific with *P. parviflora*, and I can find no good reason for separating them.
- (12). *Pterostylis barbata* Lindl. (I, 7).—In at least some of the copies of "Australian Orchids" which I have seen, the colouring of this species is faulty. The curious filiform labellum is densely beset with bright yellow hairs. In the plates referred to, they are greenish-brown.
- (13). *Dipodium* (I, 7).—The plant shown here by Fitzgerald with yellowish-green flowers was originally described by F. M. Bailey in these PROCEEDINGS, vi, 1881, p. 140, as a distinct species, *D. Hamiltonianum*. Subsequently he reduced it to a variety of *D. punctatum*; but Cheel (*ibid.*, xlvi, 1923, p. 681) rightly restored it to specific rank.
- (14). *Sarcochilus falcatus* R.Br. (I, 5).—Although this species is sometimes found in the straggling, erect attitude depicted by Fitzgerald, I cannot but feel that he has done scant justice in this case to one of the most beautiful of our smaller epiphytes. For a very fine photograph which correctly shows the usual habit and appearance, see *Aust. Orch. Rev.*, i (3), 1936, Frontispiece.